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Isotopes have same # of protons, but different # of neutrons.
In a neutral atom, # of protons = # of electrons.

Use a periodic table of the elements to answer these questions.

1. The following graphics represent the nuclei of atoms. Using a periodic table of elements, fill in the table.

What the nucleus looks like	What is this element?	How many electrons does the neutral atom have?	What is the mass number?
			(atomic mass)
N P P P N N N	Li	3	7
P N N P N P P N P N P N	C	6	12
P	H	1	1
N P N	H	1	3
P N P N N P N P N	Be	4	9

2. How many protons and neutrons are in the nucleus of each isotope?
   a. hydrogen-2 (atomic number = 1) atomic mass P = 1 N = 1
   b. scandium-45 (atomic number = 21) P = 21 N = 24
   c. aluminum-27 (atomic number = 13) P = 13 N = 14
   d. uranium-235 (atomic number = 92) P = 92 N = 143
   e. carbon-12 (atomic number = 6) P = 6 N = 6

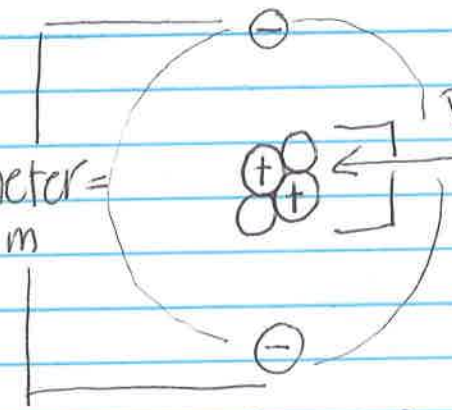
Ions of atoms do not have a neutral overall charge.

3. Although electrons have mass, they are not considered in determining the mass number of an atom. Why?
   Electrons are so small compared to protons + neutrons that we dismiss mass.
4. A hydrogen atom has one proton, two neutrons, and no electrons. Is this atom an ion? Explain your answer.
   Yes it is an ion with a (+1) charge.
5. An atom of sodium-23 (atomic number = 11) has a positive charge of +1. Given this information, how many electrons does it have? How many protons and neutrons does this atom have?
   P = 11 N = 12 E = 10

Structure of the Atom

Atoms are made of three subatomic particles: protons, neutrons, and electrons.

1 Å = Diameter = 10^{-10} m
One Angstrom



	Charge	Mass (g)	A.M.U. Atomic Mass Unit
Proton	+1	1.673×10^{-24} g	1
Neutron	Ø	1.675×10^{-24} g	1
Electron	-1	9.109×10^{-28} g	Ø

Mercury	element name
80	atomic number = # of protons
Hg	chemical symbol element symbol
200.59	atomic mass # of protons + # of neutrons

Weighted mass average of all isotopes of that element.

Find # of neutrons...

(rounded) atomic mass − # of protons = # of neutrons

201 − 80 = 121 neutrons